1994 Annual Report

Biological and Chemical Defence Review Committee

The Committee

Clive E. Holloway (Chairman)
Raymond G. Marusyk
Gabriel L. Plaa

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SUMMARY

This report records the 1994 activities of the Biological and Chemical Defence Review Committee (BCDRC). It also indicates the current state of the implementation of the recommendations made in the 1988 Barton Report and the Department of National Defence's reaction to recommendations contained in previous BCDRC reports.

We have concluded that there are neither indications of duplicity within Canada's biological and chemical defence program nor evidence to support the contention that offense related activities are being conducted either on behalf of Canadian authorities or to comply with any multilateral treaty commitment.

It is our opinion that Canada should retain the capability to conduct a moderate program of defensive research and development to permit military operations under the threat of biological and chemical weapons.

The Committee recommends that:

I. As the Defence Research Establishment Ottawa (DREO) is no longer authorized to, or capable of, conducting biological or chemical defence research, the "BCDRC's Responsibilities" be revised by deleting the requirement to visit DREO annually and to report on the current activities at this laboratory.

II. The Defence Research Establishment Suffield's (DRES) biological agent holdings be restricted to those micro-organisms that are in frequent use or not readily available from central strain repositories.

III. The BCDRC be contractually guaranteed access to all private sector laboratories that become involved in the Biological and/or Chemical Defence Research and Development program either under the prevailing contracting system or through the auspices of the industrial partnership proposal.

IV. The authorized maximum quantities of chemical agent stocks at DRES be reviewed.

V. An invitation be extended to at least one member of the BCDRC to attend major Biological and Chemical Defence activities such as Exercises Northern Lights and Krypton Encounter.

VI. Canada's current policy concerning the development and refinement of verification, compliance monitoring and investigatory techniques be reviewed.

INTRODUCTION

The policy of the government of Canada is to press for global, comprehensive and verifiable treaties to ban all biological and chemical weapons. However, while the threat from such weapons endures, Canada has an obligation to ensure that members of the Canadian Forces (CF) have adequate training and equipment to protect themselves against exposure to chemical and biological agents.

On the other hand, the Canadian public has the right to be assured that Canada's policy of maintaining only a defensive capability in this field is fully respected at all times, and that any research, development and training activities undertaken pose no threat to public safety or the environment.

To facilitate this assurance, the Biological and Chemical Defence Review Committee (BCDRC) was established by the Minister of National Defence in 1990. The Committee is mandated to review annually the research, development and training activities in chemical and biological defence undertaken by the Department of National Defence (DND) to ensure that they are defensive in nature and conducted in a professional manner with no threat to public safety or the environment. (BCDRC Responsibilities are in Annex C).

The Committee members' appointments are approved by the Deputy Minister of National Defence and the Chief of the Defence Staff on the recommendation of the Chairman of the Defence Science Advisory Board (DSAB). Nominations for BCDRC membership are solicited by the Chairman DSAB from the Royal Society of Canada, the Canadian Federation of Biological Societies, the Canadian Society of Microbiologists, the Chemical Institute of Canada and the Society of Toxicology of Canada.

The present members are:

Chairman	Dr Clive E Holloway	York University
Member	Dr Raymond G Marusyk	University of Alberta
Member	Dr Gabriel L Plaa	University of Montreal

Commencing in 1990, Annual Reports have been submitted. Two of these have subsequently been made available to the public. (See Annex B).

COMMITTEE ACTIVITIES

To effect our mandate in this the fifth year of our review process, Drs Holloway and Marusyk attended the DND Annual Nuclear, Biological and Chemical Defence Workshop in October 1994 and, between 22 April and 03 June 1994, we visited the below listed DND Establishments, including the associated laboratories, ranges and training facilities:

- National Defence Headquarters with staff briefings from:

  Chief Research and Development (CRAD)
  Deputy Chief of the Defence Staff
  Surgeon General

- The Department of Foreign Affairs and International Trade (DFAIT)

- Canadian Forces Base Chilliwack, 1 Combat Engineer Regiment, the Canadian Forces Officer Candidate School, Canadian Forces School of Military Engineering and Third Battalion Princess Patricia's Canadian Light Infantry with briefings from each on the biological and chemical training being undertaken and facilities available, followed by a troop demonstration

- Canadian Forces Nuclear, Biological and Chemical (CFNBC) School with briefings on its responsibilities, resources and training

- Defence Research Establishment Ottawa (DREO)

- Defence Research Establishment Suffield (DRES) with briefings on the responsibilities and resources of DRES, the Defence Technologies Division, Defence Sciences Division (DSD), the Medical Countermeasures Section, the Hazard Avoidance Section and the Physical Protection Section including current and future programs.

Reports were presented to the Committee by representatives from four Canadian non-governmental agencies who have biological or chemical research and/or developmental (R&D) contracts with DRES.

While at DRES, the BCDRC held privileged discussions with representatives of the DSD Joint Occupational Safety and Health Committee, the three involved Unions, the Animal Care Committee and the Establishment General Safety Officer. Further, time was made available at DRES to allow any member or groups of members to approach us to discuss matters of concern. These activities provided helpful insights into the program and morale at Suffield.

To enhance our perspective of the concerns of Canadians in Canada's biological and chemical defence activities, an evening meeting was held in Vancouver with a representative from the University of British Columbia Science for Peace Group, an afternoon session in Ottawa with a representative of the Canadian Physicians for Global Survival and an afternoon was spent at the University of Toronto with representatives of the Science for Peace Group.

As mandated, the BCDRC reviewed DND's 1994 Biological and Chemical Defence Research and Development Program and determined that it was in accordance with current Canadian Government Policy. In addition, the latest edition of the DRES Annual Report and the current R&D contracts and publications lists were scrutinized.

IMPLEMENTATION OF BARTON REPORT RECOMMENDATIONS

The implementation of the recommendations contained in the Barton Report was examined in detail. The current status of each recommendation was ascertained to be:

GENERAL

1. **In the course of the annual program and budgetary process, the authorizing officer at each level be required to sign a certificate of compliance with Departmental policies.**

   Certificates of Compliance for 1994/1995 were reviewed and found to be in order.

2. **A senior Review Committee be established in association with DSAB.**

   We constitute such a Committee.

3. **"Second opinions" should be obtained from outside sources on some of the potentially controversial test programs.**

   The BCDRC considers that the most effective way to obtain credible second opinions would be to adapt the methodology developed for Project SWIFTSURE, in particular the use of outside committees. Some of these, especially those established to discuss research policy, might collaborate through the medium of workshop type conferences from which "second opinions" would most surely evolve. When selecting such external committees, stress should be placed on geographic breadth and scientific competence of designated personnel. Nominations should be made by impartial third parties such as scientific, engineering or other scholarly societies.

4. **A document be prepared annually which would set out the nature of the research and development work under way, the number of people involved, and allocated funding.**

   The 1990/91 CRAD Review was published in February 1992. The 1991/92 Review was published in January 1994. The 1992/93 and 1993/94 CRAD Reviews are currently under production.

5. **A layman's pamphlet be published which would help improve public understanding about Biological and Chemical Defence (BCD).**

   An appropriate Departmental pamphlet was published in August 1990. A similar pamphlet, emphasizing the work at DRES, was published in April 1993.

6. **A DND directive on policies and procedures regarding the use of volunteers and animals be published.**

   DND Policy - Animal Use in R&D was issued on 15 June 1989.

   Canadian Forces Administrative Order 34-54, Use of Volunteers as Human Subjects of Research, should be promulgated by March 1995.

DRES

1. **A procedure be established to ensure that the DRES Safety Manual is reviewed at prescribed regular intervals of not more than three years. Safety drills should also be conducted at prescribed regular intervals.**

   The procedure has been established and implemented. Safety drills are being conducted as recommended. A new safety plan, which will comply with the recommendations of the 1992 environmental audit, is in the final stages of development.

2. **An automatic annual review and certification procedure be instituted to confirm that stocks of toxic agents are being kept to the minimum level necessary for the conduct of an efficient research and development program.**

   The annual inventory audit was completed in January 1994 and reviewed by the BCDRC in May 1994. We agreed that stocks were being properly maintained at a minimum level which in most cases is only a fraction of the authorized levels

3. **The arrangements being implemented to improve security and access controls be expedited.**

   Completed.

4. **Pending the destruction of the excess agent stocks now stored in the Experimental Proving Ground, the adequacy of existing physical security arrangements be reviewed with a view to strengthening them.**

   Completed.

5. **The incinerator which is to be acquired for the program be considered for use in the destruction of other dangerous industrial chemicals, including PCBs.**

   As the Alberta Provincial Government legislated this recommendation unimplementable, the incinerator was sold and its removal from DRES was completed by 6 August 1992.

6. **The Experimental Proving Ground (EPG) operation and maintenance be given "project" status within the CRAD program.**

   Implemented. This gives positive visibility to all activities,

funding and personnel involved in the EPG and ensures an annual review as a separate program component.

7. **The scope of the safety and environmental requirements governing outdoor testing at DRES be determined by the provisions of the Canadian Environmental Protection Act.**

   Although the present Act does not include such express provisions, the Federal Minister of Environment has said that the department will develop the requisite guidelines as and when necessary. In addition, a staff control system is in place and functioning to ensure compliance with all constraints.

8. **A full environmental audit of DRES be commissioned as soon as possible and that it be repeated at regular intervals of, say, five years.**

   Acres Consultants Ltd, having completed the audit under a Supply and Services Canada contract, submitted their final report in February 1992. An internal staff agency has been situated to initiate recommendation compliance. All the Report's recommendations have been addressed and full compliance is anticipated. The Acres' report has been deposited with the Canada Institute for Scientific and Technical Information (CISTI), the National Library and major university libraries throughout the country. The follow-on audit is scheduled for 1997. The BCDRC will review progress annually.

DREO

1. **A regular annual review procedure be instituted at DREO to confirm for the record that stocks of chemical agents are kept to the minimum necessary for the research and development program.**

   The annual inventory audit was completed in January 1994 and reviewed by the BCDRC in April 1994. We established that the entire chemical agent inventory has been destroyed and all storage and handling facilities removed. In addition, the laboratories have been dismantled and the facility decommissioned. The capability to hold and to use biological and chemical agents at DREO no longer exists.

2. **As part of the implementation of the Canadian Environmental Protection Act, an environmental audit of DREO be carried out at the first convenient opportunity, and at regular intervals (say five years) thereafter.**

   Having completed the audit under a Supply and Services Canada contract, Acres Consultants Ltd submitted their final report in November 1991. All the Report's recommendations have been addressed and compliance realized. This report is widely available as noted above (under DRES).

IMPLEMENTATION OF BCDRC REPORT RECOMMENDATIONS

Note: Once a recommendation has been complied with to the satisfaction of the Committee and is so recorded in a Report, it will cease to be included in subsequent Reports.

1. **The flow of information within the Defence Research lab- oratories between sections, management and staff might be improved — possibly through occasional informal meetings and discussions with senior managers.**

   There is marked improvement in awareness levels. Monitoring will continue.

2. **Career management procedures should be more closely attuned to the needs of small but extremely important units such as the CFNBC School.**

   An improved personnel rotation plan which caters to enhanced continuity appears to have been adopted. Monitoring will continue.

3. **A higher percentage of CFNBC School staff should have scientific backgrounds.**

   Notwithstanding progress made to date, we consider this issue to be of sufficient concern to warrant continued monitoring.

4. **Restricted agent training should continue to be conducted annually at DRES for selected military personnel.**

   The intended level of compliance with this recommendation has been achieved. Monitoring, based on NDHQ Instruction DCDS 15/93 of 21 July 1993, will continue.

5. **CRAD should establish an accountability system to reflect:**

   a. **all current biological and chemical research activities, in-house and on contract, including budgets;**
   b. **the publications and resultant presentations directly attributable to each activity or sub-activity; and**
   c. **notes explaining why specific activities have not been publicized.**

   An excellent accountability reporting system has been implemented. The BCDRC will review the classified paragraphs during their annual visit to the responsible laboratory. Monitoring of the report will continue.

6. **An enhanced public relations program should be initiated to emphasize the many excellent achievements of the research laboratories. Perhaps the Fiftieth Anniversary of DRES could be used to initiate regular open house events, occasional visitations by citizen groups or non-governmental scientific organizations and invitations to learned societies to hold chapter meetings at DRES.**

   A noticeably improved program is in place. To reinforce this endeavour, we advocate that every plausible local special occasion be exploited, as was done during the various Fiftieth Anniversary celebrations, and that community involvement

become the norm whenever possible. Further, the outstanding, DRES created, historical exhibit of Canada's biological and chemical defence efforts, was viewed in Medicine Hat by over 12,000 visitors in 1993. This display should be exploited to the maximum nationwide.

7. **Canada continue to develop and refine verification, compliance monitoring and investigatory techniques.**

   DND relayed this concern to DFAIT, the responsible Department, who discussed it with the Committee. Unfortunately, without a revision of DFAIT priorities, further work will not be undertaken unless additional funding is provided. It is considered that the issue merits review.

8. **Further consideration be given to the co-location of DRES and the CFNBC School.**

   Although the technical advantages to accrue from such a move are recognized, financial constraints preclude its implementation. The Committee will continue to review this issue.

9. **BCDRC Annual Reports should be submitted to the Ad Hoc Committee on Chemical Weapons of the Conference on Disarmament in Geneva.**

   As this Committee no longer exists, it is suggested that the Reports be offered to the Review Committee of the Biological and Toxin Weapons Convention and to the Organization for the Prohibition of Chemical Weapons. DFAIT, the Department responsible for the implementation of this recommendation, has agreed and will comply.

10. **The BCDRC be offered annually a vacancy on DND's Nuclear, Biological and Chemical Senior Officers' Course.**

    Agreed. Dr CE Holloway attended the Course in 1992 and arrangements have been made for other Committee members to attend in the future.

11. **Priority of effort be given to fundamental biochemical research which could also have applications outside the defence sphere.**

    Agreed. However, the primary basis of the research must concern defence but any useful spinoffs will be shared.

12. **An information exchange system be instituted to ensure that applicable CRAD directed research results are readily available to civilian industry.**

    Agreed. This will be accomplished by increasing the distribution of CRAD Reports to interested industries, by making the Directorate of Scientific Information Services (DSIS) Data Base readily available to non-governmental agencies, by exploiting the Supply and Services Canada (SSC) electronic information system and by DND becoming more pro-active in product development.

13. **CRAD invite, through learned societies, a number of knowledgeable outside scientists to a workshop to discuss a biological defence research strategy for Canada for the next decade.**

    Consideration is being given to instituting advisory committees by discipline. However, a solution to the problem of constraints imposed by international agreements will have to be found if full utility is to be achieved.

14. **An invitation be extended to at least one member of the BCDRC to attend the annual DND NBC Conference.**

    Approved. Dr. G.L. Plaa attended in 1993. Drs. Holloway and Marusyk attended in 1994.

15. **The Annual Agent Inventories Audit Reports be restructured as follows:**

    a. **biological agents used for research purposes are to be identified by complete strain or antigenic designator;**
    b. **stocks of biological agents are to be quantified in meaningful terms; ie, infectious titres or colony forming units per given volume; and**
    c. **stocks of biological agents that are clearly not agents of biological warfare should be identified as such with an accompanying statement to the effect that such agents may be found in Public Health, University and Industrial laboratories.**

    Approved. This work will be completed when the DRES containment facility has been recommissioned.

16. **DND apprise DFAIT of the widespread concern over Canada's perceived lack of interest and international scientific involvement in the verification issue.**

    DND relayed this concern to DFAIT who discussed it with us. Unfortunately, without a revision of DFAIT priorities, the question will not be reconsidered unless additional funding is forthcoming.

17. **DFAIT be requested to present annually to the BCDRC a review of the activities undertaken by Canada to comply with the arms control obligations accepted under the Biological and Toxin Weapons and the Chemical Weapons Conventions.**

    Approved. The initial briefing was presented to the Committee by DFAIT representatives on 02 June 1994.

18. **DND establish and publicize a means whereby access by special interest group representatives to the contents of international agreements is provided.**

    Approved. DND is currently considering the various options available to implement this recommendation.

SOME IMPORTANT ISSUES

Concerned Citizens Groups.

The BCDRC met with representatives of the Canadian Physicians for Global Survival and the University of Toronto and University of British Columbia Chapters of Science for Peace. Written and oral submissions were received. The primary concerns of these citizen groups warrant comment. Based on our research and discussions with Departmental personnel, we offer the following:

a. **Concern:** There continues to be a lack of legislation in Canada pertaining to offensive biological and chemical weapons development and the Chemical Weapons Convention.

Comment: DFAIT has established the Canadian National Authority for the Implementation of the Chemical Weapons Convention. The requisite legislation is currently being drafted.

b. **Concern:** The conduct of recombinant DNA technology at DRES.

Comment: The objective of all DRES sponsored recombinant DNA technology is threefold. Firstly, to develop suitable methods for the protection against or the treatment of infections from potential biological agents and toxins; secondly, to develop rapid and sensitive methods for the detection and identification of potential biological agents and toxins; and thirdly, as these are of significant usefulness in general medicine, to share findings with other medical researchers.

c. **Concern:** How do interested persons differentiate with unequivocal confidence between offensive and defensive research.

Comment: The line between offensive and defensive biological and chemical research is a fine one. Experimentation with lethal substances for the testing of defensive devices understandably arouses suspicions that results are being or could be diverted to offensive purposes. Our method of inspection and monitoring has assured us that at DRES the budget is insufficient, the facilities inadequate and the production and field trial personnel lacking to permit the production and packaging of chemicals, toxins or viable agents for warfare purposes. Further, for such research to be of value, the CF would need to devote significant training and instructional effort to offensive operations. Based on our visits to a reasonably broad spectrum of CF units and training establishments and attendance at the Annual DND NBC Conference, we are able to confirm absolutely that the CF are focused on defensive operations only.

However, it is widely acknowledged that many lethal substances in fearsome amounts could be created in relatively unsophisticated facilities if a high level of risk is accepted by the producers so, essentially, a final verdict depends on openness and trust. DRES has been particularly open in its dealings with the press and the public in the past few years and has allowed our Committee to scrutinize classified projects and international agreements. We have established a state of mutual trust with DRES personnel and are convinced that the research being conducted there is wholly directed towards defence.

For a more erudite response, attention is particularly invited to a paper presented by Dr David L Huxsoll of Louisiana State University. This article and other supporting presentations are printed in Volume 666 of the Annals of the New York Academy of Sciences [The Microbiologist and Biological Defense Research: Ethics, Politics and International Security] dated 31 December 1992.

d. **Concern:** Allegations of possible commitment to other Nations' biological and chemical research programs were made on the basis of Canada being a signatory to certain treaties and Memoranda of Understanding (MOU) which were classified and hence not readily available for perusal.

Comment: The applicable treaties and MOUs were examined meticulously. No evidence of such a commitment was found nor was there any indication that Canada could be coerced into R&D activities contrary to approved National policies.

e. **Concern:** If Canada's MOUs and Agreements on BCD are relatively innocuous, as maintained by the BCDRC, why are they not published in accordance with Article 102 of the Charter of the United Nations.

Comment: We are given to understand that these MOUs are classified at the request of one or more of the other signatories and thus cannot be made public. However, DND will discuss this issue with DFAIT.

f. **Concern:** The construction of a "Level 4" containment facility at DRES.

Comment: The upgrading of the existing containment facility to conform with current Health Canada standards for "Level 3" is underway. There is neither the intention nor the requirement at present to build a "Level 4" facility.

It should be noted that the real constraint on sensitive research is not the facility level available but it is the level of risk to their personal safety that those involved are prepared to accept. Further, the current DRES safety and laboratory control regulations preclude any individual from conducting sensitive R&D on site without assistance from other staff members. Clandestine collaboration to this degree is virtually impossible to achieve under the existing circumstances and leadership at DRES.

g. **Concern:** Given that the Canadian public has the right to be assured that Canada's policy of maintaining only a defensive biological and chemical capability is fully respected, and that research, development and training activities undertaken by DND are professionally conducted and pose no threat to public safety or the environment, DND should publish the BCDRC's annual reports in a timely fashion.

Comment: The Committee has recommended the publication of their Reports and DND has so agreed.

h. **Concern:** Canada should not only continue to participate in international efforts both to develop and to improve verification methods and technologies but also should increase the activity level in this field.
Comment: The Committee fully supports this initiative. Although the responsibility for verification rests with DFAIT, the scientific expertise resides in DND. We are convinced that the current policy will only lead to the degradation of Canada's leadership in related international fora. The present situation merits urgent review.

i. **Concern:** Notwithstanding the best of intentions of defence researchers, the question has been raised as to whether the potential for developing civilian applications through the militarization of biology research is sufficient to overcome the inherent risks.

Comment: This concern, particularly when linked with the implied issue of scientific ethics related to the recognized risk of producing novel and possibly pathogenic organisms, raises quite a serious dilemma for DND. However, DND is obliged to ensure that members of the CF have adequate training and equipment to protect themselves against exposure to chemical and biological agents. The most effective method identified to date to meet this obligation is the one currently being exploited.

COMMENTS

- We would once again like to express our appreciation for the candidness and cooperation given to us throughout our 1994 visits' schedule.

- Within DND's biological and chemical defence research and development program the quality of science, the projects underway, the resultant publications and the level of safety awareness continue to be of a high standard. The potential of commercial uses of the results of the work at DRES, particularly in the fields of public health, medical science, geriatrics and agriculture, should be made more widely known to the public.

- The reduction in personnel through attrition to meet new staffing levels is causing a disparate impact in some talent groupings at individual Establishments. This matter compels significant management attention be paid to ensure that safety and morale continue to be paramount considerations.

- Some of the CFNBC School's course material, particularly that relating to biological aspects, lacks currency. Extensive revision is required.

- Although statements describing all existing contracts with outside agencies are open to our review, the continuation of an annual briefing of the BCDRC by a cross-section of selected contractors is deemed to be necessary in order to provide us with complete confidence in the total program.

- Middle East events, the current state of political affairs in Eastern Europe, particularly in view of the recent detection of apparent smuggling of plutonium and possibly other nuclear, biological and chemical materials, and Canada's involvement in peace restoration and peacekeeping operations in the lesser developed areas of the world all suggest that a discreet R&D program aimed at maintaining state-of-art detection, protection and verification devices should continue. In addition, initial and annual refresher training in compliance with NDHQ Policy Directive P/6 93 of 03 August 1993 should be carried out by all uniformed members of DND.

CONCLUSIONS

- The BCDRC found neither indications of duplicity within DND's biological and chemical program nor evidence to support the contention that offense related activities were being conducted either on behalf of Canadian authorities or to comply with any multilateral treaty commitment.

- We remain convinced that Canada must retain a modest capability to effect defensive research and development to permit military operations under the threat of biological and chemical weapons. We believe that the priority of effort should be accorded to the following projects, which in addition to their obvious military relevance also contribute to treaty monitoring, medical support, pollution control and the handling of toxic wastes:

  a. verification technology;
  b. agent detection and identification;
  c. prophylaxis and therapy for biological agents;
  d. development of less physiologically burdening individual protective clothing with wider geographical and employment specific pertinence;
  e. refinement of procedures to foresee and assess hazards posed by both established and hypothetical chemical and biological agents; and
  f. improved decontaminants.

RECOMMENDATIONS

I. As the Defence Research Establishment Ottawa (DREO) is no longer authorized to, or capable of, conducting biological or chemical defence research, the "BCDRC's Responsibilities" be revised by deleting the requirement to visit DREO annually and to report on the current activities at this laboratory.

II. The Defence Research Establishment Suffield's (DRES) biological agent holdings be restricted to those micro-organisms that are in frequent use or not readily available from central strain repositories.

III. The BCDRC be contractually guaranteed access to all private sector laboratories that become involved in the Biological

and/or Chemical Defence Research and Development program either under the prevailing contracting system or through the auspices of the industrial partnership proposal.

IV. The authorized maximum quantities of chemical agent stocks at DRES be reviewed.

V. An invitation be extended to at least one member of the BCDRC to attend major Biological and Chemical Defence activities such as Exercises Northern Lights and Krypton Encounter.

VI. Canada's current policy concerning the development and refinement of verification, compliance monitoring and investigatory techniques be reviewed.

ANNEX A

BIOGRAPHIES OF COMMITTEE MEMBERS

Dr. Clive E. Holloway (Chairman)

A graduate in chemistry from the Bristol College of Advanced Technology and the University of Western Ontario; he is currently a Professor of Chemistry and Director of Natural Science at York University. He has been involved with the executive committee of the Chemical Institute of Canada and, at present, is active with the Association of the Chemical Profession of Ontario.

Dr. Raymond G. Marusyk

A graduate in virology from the University of Alberta and the Karolinska Institute in Stockholm; he is the Professor of Virology in the Department of Medical Microbiology and Infectious Diseases at the University of Alberta and is the Associate Director of the Provincial Laboratory for Public Health. He is President of the Canadian Society of Microbiologists and is a consultant with the World Health Organization.

Dr. Gabriel L. Plaa

A graduate in toxicology from the University of California in San Francisco, he is a Professor in the Department of Pharmacology in the Faculty of Medicine and the Director of the Interuniversity Centre for Research in Toxicology at the University of Montreal. Among his many appointments and affiliations, he is a member of the Society of Toxicology of Canada and the American Board of Toxicology.

ANNEX B

REFERENCES FOR PREVIOUS REPORTS

Research Development and Training in Chemical and Biological Defence within the Department of National Defence and the Canadian Forces: A Review by William H. Barton, Minister of Supply and Services Canada, 1989, p.54. [Available in Canada through the Canadian Government Publishing Centre, Supply and Services Canada, Ottawa, Ontario K1A 0S9. Catalogue No. D2-79/1989E, ISBN 0-660-13103-X.]

First Annual Report of the Biological and Chemical Defence Review Committee, Minister of National Defence, Ottawa, 1991, p.7. It is also included in the second annual Review of the Chemical and Biological Defence Program January 1990 April 1991, Minister of National Defence, Ottawa, February 1992, p.28. [Both available through the National Defence Headquarters Library Services, National Defence Headquarters, MGen G.R. Pearkes Building, Ottawa, Ontario K1A 0K2.]

Second Annual Report of the Biological and Chemical Defence Review Committee, is included in the third annual Review of the Chemical and Biological Defence Program May 1991 - March 1992, Minister of National Defence, Ottawa, January 1994, p.26. [Available through the National Defence Headquarters Library Services, National Defence Headquarters, MGen G.R. Pearkes Building, Ottawa, Ontario K1A 0K2.]

ANNEX C

BIOLOGICAL AND CHEMICAL DEFENCE REVIEW COMMITTEE

RESPONSIBILITIES

GENERAL

1. The Biological and Chemical Defence Review Committee (BCDRC) is to review annually the research, development and training programs in biological and chemical defence undertaken by the Department of National Defence (DND) to ensure that all activities within those programs are, in fact, defensive in nature and are conducted in a professional manner with no threat to public safety or the environment.

EXECUTION

2. The BCDRC will annually:

a. visit:

(1) the Defence Research Establishment Ottawa (DREO);
(2) the Defence Research Establishment Suffield (DRES);
(3) the Canadian Forces Nuclear, Biological and Chemical (CFNBC) School; and
(4) at least two other DND Establishments where biological and chemical training is conducted.

b. review the annual DND Research and Development Program as originated by the Chief of Research and Development (CRAD) and approved by the Defence Management Committee;

c. review the implementation of the recommendations made in:

(1) the BARTON REPORT of 31 December 1988;
(2) the 1991 and 1992 Independent Environmental Audits of DREO and DRES; and
(3) the previous BCDRC Reports;

d. examine the Annual Reports, activities and records of the Human Ethics and Animal Care Committees and current research and development contracts and publications lists of DREO and DRES; and

e. submit a report of their activities and findings to the Chairman, Defence Science Advisory Board (DSAB) who will convey the Report to the Chief of the Defence Staff and the Deputy Minister of National Defence.

COORDINATION

3. The Committee, consisting of a chairperson and two members representing the disciplines of bacteriology/microbiology, chemistry and toxicology, is to be appointed for terms of two or three years by DND on the recommendation of the Chairman, DSAB.

4. The DSAB will provide the requisite organizational support and will assign an executive officer to the Committee who will attend to all procedural, reporting, coordination and administrative matters as directed by the Committee.